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ABSTRACT

Six papers on information technology, the development of information systems for Third World countries, handling of sound recordings, and library automation were presented at the 1984 IFLA conference. They include: (1) "Handling, Storage and Preservation of Sound Recordings under Tropical and Subtropical Climatic Conditions" (Dietrich Scholler, Austria); (2) "UNIMARC Version of MINISIS ('little' Integrated Set of Information Systems)" (Henriette D. Avram, United States) which describes two phases of the enhancement of the International Development Research Center's MINISIS system by extending it to create and accept records in the IFLA developed UNIMARC format; (3) "The Possibility of a Conflict Between Functional Librarianship and the Needs or Necessity of Advanced Information Technology" (Peter W. Chateh, France); (4) "United We Stand; Divided We Fall: The Benefits to Libraries of International Standardization in Videotex" (Geoff Andrew, United Kingdom); (5) "Minisis/UNIMARC Interface--Its Impact on Libraries" (Charles A. Godfrey, Michael Sherwood, and Garth Graham, Canada); and (6) "L'Informatisation de la Bibliotheque Nationale de Paris: Methode de Conduite du Projet; Participation et Formation du Personnel" (The Automation of the National Library in Paris: Project Management; Personnel Participation and Training) (Christian Lerin and Annick Bernard, France). (THC)

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Handling, Storage and Preservation of Sound Recordings under Tropical and Subtropical Climatic Conditions

by

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Dietrich SCHÜLLER

Handling, Storage and Preservation of Sound Recordings under Tropical and Subtropical Climatic Conditions.

Introduction

More than 100 years have passed since Thomas A. Edison invented the phonograph and already in 1899 the Academy of Sciences in Vienna founded the Phonogramm-archiv, the first sound archive of the world. But only during the '60s and '70s audiovisual media including sound carriers were more widely used. In some cases we find specialized media-archives but the greater part of av-media are held in smaller collections attached to research institutes and libraries. In Third World countries this trend becomes even more important as in orally transmitted cultures the written document is a poor and insufficient substitute for the highly complex accoustical communication in speech and even more so in music. While taking over self-responsibility for documentation of and research into the plurality of these cultures an even stronger emphasis on sound recordings and other av-media documentation seems to be inevitable. Sound carriers, however, are subject to deterioration to a much higher degree than conventional print media, especially under tropical and subtropical conditions. Considering the world wide lack of intimate knowledge about handling, storage and preservation av-media and especially sound carriers it seems to be advantageous firstly to survey the general requirements for proper handling, storage and preservation and then take into account the peculiarities caused by tropical and suptropical climatic conditions. For practical reasons this study is restricted to conventional sound carriers only, i.e. the vinyl disc (LP) and magnetic tape. An appendix will deal with the compact disc (CD) and future developments (1).

Before dealing with the nature of our sound carriers it may be useful to point out the principal difference between print media and audiovisual media. The written word represents a verbalized mental process by a series of representational symbols. There is a certain amount of redundancy and without any real detriment to communi-

cation letters and words may be omitted. Av-media, on the other side, represent a physical state (in case of photographs) or a physical process (in case of film or sound records). Each detail of this record is information and, in contrast to the written word, losses can only be reconstructed with a certain comparatively low degree of probability. The essential value of an av-document, however, lies in the very information it supplies over and above what can be transcribed. It is therefore essential that just these details are recorded and preserved with utmost accuracy.

Microgroove disc and magnetic tape.

Microgroove records (vinyl records) are discs made from PVC/PVA copolymer, and have been produced since 1948. Today the most common formats are the "single" (45 rpm, 7" diameter, 3 min./side) and the "LP" (33 1/3 rpm, 12" diameter, 20 - 25 min./side). The groove in form of a spiral carries the information which is encoded by lateral and vertical deviations. Only the undamaged groove guarantees the quality of the recording. This calls for cleanliness as well as chemical and mechanical stability. In view of the relative softness of the material the demand for mechanical stability is the greatest problem in handling these discs. The magnetic tape on the other hand consists of two layers: the base and the magnetic coating. Previously acetate cellulose and sometimes PVC were used for base materials whereas today practically only polyester is used. In open-reel tape the magnetic layer consists of iron oxide, while compact cassettes additionally use chromium dioxide or iron ("metal"), and the respective binders. This oxide layer carries the information in form of a chain of alternating magnetic fields. As with discs, cleanliness, chemical and mechanical stability of the material is constitutive for the quality of the recording. In addition the stability of the stored magnetism is of course of principal necessity. Before dealing with all the factors relating to handling and storage it seems to be necessary to speak about deterioration by normal use. As stated before, vinyl discs are very

sensitive. Extreme care in handling these records and the most accurate maintenance of equipment are necessary to avoid damage. It is essential to choose the right stylus, to carefully control its shape and the tracking force ("needle pressure"), and to avoid vulnerations by carelessly placing the needle onto the record. Experience tells that even the best training of the staff cannot guarantee indeliberate damages. Therefore the use of the records has to be limited as much as possible, and long-term preservation of the vinyl disc is only guaranteed by systematically copying the records onto tape which then serves for everyday use. The record itself should only be used again for making another working copy, if necessary.

With tapes the danger of deterioration through normal use is more or less negligible. A precondition, however, is regular maintenance, i.e. cleaning and demagnetisation of the equipment to avoid loss or damage of the recorded signal.

Environmental factors, recommendations for handling and storage.

Temperatures above 50°C are a risk for vinyl records as well as for tapes made from PVC (today nearly out of use). The most widely used polyester tapes will tolerate far higher temperatures but it would be unwise to expose tapes to such temperatures as this will result in greatly increased print-through (see below). The general guide line for archives is 20°C ± 3°, whereas longterm storage areas where tapes are rarely used may profit from lower temperatures, say 10°C. Ever present but underestimated risks are heaters, sunshine and lamps which often exhibit high temperatures quite unnoticed, thus endangering records and tapes.

Humidity: Base materials are not really sensitive to humidity. However, humidity constitutes a major risk. Humid climate together with certain temperatures sometimes creates ideal conditions for micro-organisms (see below). These then may damage sound carriers. In addition to that, recent studies tell us that the

polyurethane binders which bind the oxide onto the base material of the tapes are subjected to a process of hydrolysis. This leads to a loss of oxide particles forming debris or smear that prevents a perfect tape-to-head-contact which again deteriorates the recording or replay process. In severe cases this may result in a permanent loss of information. The authors of these new studies recommend even more tighter climatic conditions: 40% ± 5% relative humidity, temperature 18°C ± 1,5°.

It is essential to keep in mind that there is a relation between humidity and temperature; it is therefore necessary to always control both factors simultaneously.

Dust and dirt in their various appearences are the most disturbing factors. In the case of discs all particles will be detected as part of the groove. This then leads to the well-known crackles and pops. In the case of tapes dust leads to drop-outs caused by imperfect tape-to-head-contact which especially affects high frequencies. It is therefore essential to look for cleanliness in all sound archives to have filters in air-conditioning equipment. Floors and furniture should be easy to clean. On the other hand the sound carriers have to be protected by dust-proof envelopes such as polythene bags. Finger-prints which produce an ideal basis for dust have to be avoided too.

Micro-organisms: Certain climatic conditions stimulate and support the growth of micro-organisms, especially fungus. This is especially the case in hot and humid climatic conditions but can also be found in humid basements in moderate climatic zones. Mainly tapes are attacked by fungus; it is the oxide layer which is damaged, sometimes it will be totally dissolved. Lower humidity and regular airing will be good precaution measures wherever this danger is suspected.

Further damaging factors for tapes are inadequate splices, uneven winding and misshapen spools which may lead to a permanent deformation.

Peculiar to tapes is also the print-through-effect which means the unwanted mutual magnetic influence between two adjacent tape-layers. This effect depends on various factors, especially on temperature, and is furthered by external alter-

nat[illegible]g magnetic fields. Therefore the temperatures should be kept low, and alternating magnetic fields (see below) have to be avoided. Print-through, however, is an overrated deterioration, as it is not permanent and can be reduced to a very low level by repeated winding of tapes.

Magnetic fields, finally, are the natural enemy of magnetic recordings. With increasing magnitude they first start to introduce distortion followed by partial erasure up to the complete destruction of the signal. The limits are different for AC and DC fields: AC fields should not exceed 400 A/m (5 Oe), while DC fields may be tolerated up to 2000 A/m (25 Oe). Microphones, headphones, loudspeakers and VU-meters exhibit far higher magnetic fields. It is therefore necessary to keep recorded tapes well off these devices. Lightening conductors, too, must be kept well away from archival rooms.

The responsible archivist will therefore observe a list of measures to minimize the risks resulting from all these dangers. In the first instance the environmental factors have to be kept within the quoted tolerances and the storing position has to follow the recommendations, i.e. upright position for discs and tapes. Above that a bundle of further steps have to be taken: one of them is the choice of material. In the narrower sense this is not applicable to discs as they are produced by the industry. Quality control, however, is necessary to guarantee that the supplied specimens are up to the expected quality standards. Concerning tapes, only archival tapes i.e. standard play tapes (52 µm thickness) with polyester base and low print oxide by well-known manufacturers have to be chosen. Original tapes which do not meet these demands (and this is especially the case with compact cassettes (2)) are not suitable as archival masters in the narrower sense; they therefore have to be copied. Because of the still remaining risks a security plan has to be developed which ideally provides for the deposit of two archival masters in separate places. A compromise may be the deposit of the original material instead of a second archival master only. The security plan implies also the production of working copies especially in the case of discs.

At this point it must be stressed that the integrity of av-media in general is highly dependent on the state of the equipment used. Therefore only high quality equipment and its excellent maintenance guarantee the survival of the media. Beside all these physical dangers human error constitutes the greatest risk. Therefore, personnel has to be recruited with accuracy and reliability in mind; a permanent process of recalling the necessary measures has to be established. For the sake of completeness it has to be mentioned that theft, fire, influx of water etc. have to be carefully considered.

Let us now turn to those dangers which are peculiar to sound carriers in tropical and subtropical climates. According to the region we will find especially dust, high temperature, temperature fluctuations between day and night, and high humidity.

Dust: Not only in arid zones but also in regions with heavy rainfall a high degree of air pollution by dust has to be considered. This is especially true for urban areas in third world countries with their comparatively fewer paved roads. At the same time extremely high concentration of dust in the air is caused by opening windows in order to ease life in hot rooms.

Temperature and humidity: It need not be explained that in many parts of the world temperature and humidity conditions are not within the tolerance required for the storage of sound recordings. Even in the south of Europe we find temperatures not only during the day which drastically exceed the tolerances given above. In addition to that certain seasons in certain regions see strong temperature variations between day and night. If temperature does not exceed 30°C vinyl discs will not suffer. Tapes, however, react by exhibiting increased print-through effect under high temperatures and cyclic temperature fluctuations. If high temperatures are accompanied by high humidity, tapes are endangered by the mentioned chemical instability of the oxide binder, resulting in debris or smear caused by abrasive damage to the magnetic layer. Additionally, moist and hot climates are extremely good preconditions for certain kinds of micro-organisms. It should be noted that not only sound carriers themselves are

subject to fungus growth: more often the various ingredients of the packing materials,especially glue,are an ideal nucleus and nutrition for the spread of fungus.

From all these aspects it is easy to understand that in many cases machine operated air conditioning will be unavoidable to control temperature and humidity. Wherever such equipment exists, dust control may easily be added. It is essential to keep to the necessary climatic parameters throughout 24 hours a day, all year through. It is furthermore essential to control not only archive areas but all other rooms where discs and tapes are handled. It has to be kept in mind that even short exposures to unfavourable conditions are dangerous, which is true anyway for the case of regular climatic changes.

It is tragic to see that all these measures have to be taken just in those countries which are not blessed with high budgets for cultural and research purposes. By a bundle of measures, however, it seems possible to keep costs within tolerable limits. The first thing will be rigorous measures towards thermal insulations in archival buildings. The incurred costs will be off-set within comparatively short time by the resulting lower consumption of energy. On a regional level costs can be avoided through centralization as it is definitely cheaper to keep one central archive at the necessary technical standard instead of various small decentralized units. And finally - but this is a vision - through international cooperation: security copies could be preserved in countries where costs for long-term preservation are comparatively low.

Prospects for future developments:

While we have seen that the prevailing sound carriers constitute major problems in terms of their long-term stability especially under tropical and subtropical conditions the situation might be relaxed by forthcoming developments. The compact disc (CD) as marketed since 1982/83 is a digital optical sound carrier

which in many ways seems to be more stable than conventional media. The lesser vulnerability of the material itself and the ability to eliminate drop-outs and error with the help of an error correcting code reduce the risk to the chemical stability of the disc. In view of the short experience so far only more or less optimistic guesses can be made at its life expectancy at this point. But this is an issue of all technical committees of international media associations. Until now this type of optical recording was restricted to prefabricated industrial products but at present the development towards selfrecording of optical carriers is strongly pushed forward to come within financially feasible limits. We are only at the start of a new development and it is not over-optimistic to say that in all probability during the '90s there will be a common optical format for print, stills, moving images and sound. This format will exceed all conventional media with respect to invulnerability. A great amount of efforts, however, will still be required to reach this aim, especially in the field of standardization to avoid the development of too many incompatible systems and formats.

Footnotes:

1) A complete and thorough discussion of all factors related to handling and preservation of sound recordings cannot be made within this framework. It is recommended, therefore, to study the literature indicated below.

2) Although a concise argumentation cannot be carried out here it must be pointed out that the compact cassette is not up to the technical standards of today. It is not only inadequate as archival master but should not be employed for original recordings either. It will serve, however, excellently as a medium for distribution on a lower level of technical standard.

Literature:

E. ASCHINGER, Report on measurements of magnetic stray fields in sound archives, in: Phonographic Bulletin 27, July 1980

N. BERTRAM/ A. ESHEL, Recording Media Archival Attributes (Magnetic), New York 1980

N. BERTRAM/ M. STAFFORD/D. MILLS, The Print-through Phenomenon, in:Journal of the Audio Engineering Society, Vol. 28/10, October 1980

DIN 45 519, Teil 1, Magnetbänder für Schallaufzeichnungen, Bestimmung der Kopierdämpfung, Februar 1976

EBU - TECHNICAL CENTRE, Study of the Storage of Sound Programmes Recorded on Magnetic Tape, Brussels 1971

J.-M. FONTAINE, Conservation des enregistrements sonores sur bandes magnetiques, Paris 1981

IASA - TECHNICAL COMMITTEE, Standard for Tape Exchange between Sound Archives, in: Phonographic Bulletin 19, December 1977

G. JACSCHITZ/R. HUBERT, Zur Methodik historischer Tondokumentation, in: Das Schallarchiv 1, April 1977 und Das Schallarchiv 2, Oktober 1977

G.A. KNIGHT, Factors Relating to Long Term Storage of Magnetic Tape, in: Phonographic Bulletin 18, July 1977

D. LOTICHIUS, Sicherheit zuerst - auch für Tonträger, in: Phonographic Bulletin 4, August 1972

D. LOTICHIUS,Measures for the preservation and for the protection of archived program property on sound carriers, in: Phonographic Bulletin 31, November 1981

J. McWILLIAMS, The Preservation and Restauration of Sound Recordings, Nashville 1979

A.G. PICKETT/M.M. LEMCOE, Preservation and Storage of Sound Recordings, Washington 1959

D. SCHOLLER, Towards a Standard for Exchange Tapes between Research Sound Archives, in: Phonographic Bulletin 16, December 1976

D. SCHOLLER, Archival Tape Test, in: Phonographic Bulletin 27, July 1980

D. SCHOLLER, Preliminary recommendations for fire precautions and fire extinguishing methods in sound archives, in: Phonographic Bulletin 35, March 1983

D. SCHOLLER, Behandlung, Lagerung und Konservierung von Schallträgern, in: Das Schallarchiv 13, April 1983

(An updated English version of this paper is under preparation for D. SCHOLLER (ed.). Technical Manual for Sound Archives, IASA Special Publications, to be published 1985)

D. SCHOLLER, The Technical Basis of Sound Archive Work, in: D. LANCE (ed.), Sound Archives. A Guide to their Establishment and Development. IASA Special Publication No. 4, 1983

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Division: Management and Technology

Section: Information Technology

UNIMARC VERSION OF MINISIS

by

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Abstract

This paper describes activities concerning the enhancement of the International Development Research Center's MINISIS system by extending it to create and accept records in the IFLA developed UNIMARC format. Two phases are discussed.

The first phase, completed in October, 1983, was a study to determine the feasibility of modifying MINISIS for UNIMARC processing. The study concluded it was feasible to adapt MINISIS through software changes to process the UNIMARC format.

The second phase is actually the implementation of the software modifications required and these are briefly described.

MINISIS is a generalized information management system designed to perform a variety of tasks for libraries and information centers. The system is based on one developed originally by the International Labor Office and later expanded and maintained by UNESCO.

The initial system, the Integrated Set of Information Systems called ISIS, operates on a large mainframe computer. MINISIS (or little ISIS) developed by The International Development Research Center (IDRC) of Ottawa, Canada is designed for use in the Hewlett-Packard 3000 range of minicomptuers and thus has certain economic advantages for use in developing countries or smaller information agencies.

At the present time, MINISIS is installed in more than 90 agencies in countries worldwide and as different in size, language, and information needs as Ethiopia and the Netherlands, Costa Rica and Zaire, and in organizations providing a wide range of information services including libraries. Indeed, it was the growing use of the system by libraries that brought MINISIS to the attention of the Program Management Committee of the International Federation of Library Associations and Institutions (IFLA).

Among other programs, Universal Bibliographic Control (UBC) and International MARC fall within the management responsbilities of the Program Management Committee. The UBC program is well known throughout the world and needs no further clarification. International MARC however, has not to date had as much exposure to many. The International MARC Program is concerned with all the procedures and practices related to the effective exchange of bibliographic data in machine-readable form.

The International MARC Program was actually established within the British Library and the Deutsche Bibliothek in 1983. Prior to that date, although no formal structure existed, IFLA had acknowledged its importance. The program was included in the 1981-1985 Medium Term Program and has always been considered a responsibility of the Program Management Committee since its conception.

IFLA through the UBC and International MARC programs has been a staunch advocate of the concept of an item being cataloged and converted to machine readable form once by the national bibliographic agency in the country of its origin, and the resultant bibliographic record shared with other national agencies. IFLA over the years, has watched with interest as the international MARC network evolved. Therefore, the library community, while recognizing the potential of MINISIS, was concerned that the bibliographic records produced by the system were not compatible with those formulated in libraries following the major current cataloging codes all of which are based on the International Standard Bibliographic Description.

On the other hand, the international library community recognized the growing and economically sound trend in some smaller countries for one organization to be designated to undertake a number of national information functions. Some of these functions are library oriented, e.g., producing bibliographies for national publications and others are more directed to the services provided by abstracting and indexing agencies, e.g., the creation of discipline oriented data banks.

It was apparent that there would be advantages if the MINISIS system could be enhanced to cover this widening range of functions by extending it to create and accept records in the UNIMARC (Universal MARC) format which was developed as the international communications standard for data exchange under the auspices of IFLA.

In addition to the concern of the Program Management Committee, the Conference of Directors of National Libraries, through its International MARC Network Committee, was interested in compatibility among national bibliographic agencies. If libraries in developing countries could take advantage of MARC records already available from developed countries and could also transmit their own machine-readable bibliographic data to other countries for processing, much could be gained toward achieving the goal of resource sharing and the IFLA principle of one time creation of a bibliographic record.

In August 1982, during the IFLA General Conference in Montreal, Canada, IFLA and IDRC representatives met to discuss whether IDRC would be interested in pursuing a study to determine the feasibility of developing a UNIMARC version of the MINISIS system. Dr. Charles Godfrey of IDRC expressed interest in the idea and suggested funding be found to perform the study with continual support. The proposal for a study was made by IFLA to the Conference of Directors of National Libraries and the British Library, the National Library of Canada, and the Library of Congress each contributed funds to the IFLA Program Management Committee to contract with a UNIMARC expert for the conduct of the study. The expert selected was Elaine Woods from the United States. Ms. Woods had gained in-depth experience in UNIMARC while under contract to the

Library of Congress to perform the Library's testing of UNIMARC in cooperation with several other national libraries. Much of this paper is gleaned from the contractor's final report to IFLA on the MINISIS study.

The feasibility study had the following purposes: 1) to determine to what degree MINISIS is capable of processing the UNIMARC format at the present time and to identify those areas where modification would be required, 2) to specify the changes required, and 3) to determine whether the changes required for UNIMARC processing would make it possible for MINISIS to process the Common Communication Format.

The Common Communication Format is the data exchange format developed by representatives of various international agencies, such as IFLA, the International Serials Data System, the United Nations, and the Abstracting Board of the International Council of Scientific Unions under the auspices of UNESCO's General Information Program. The Common Communication Format was designed to serve as a bridge between the library and the abstracting and indexing communities, which have historically used different formats.

The MINISIS feasibility study was completed in October 1983 and concluded that it was possible and feasible to adapt MINISIS to create and accept UNIMARC records provided certain modifications were made to the system software. It was also determined that in most cases the modifications required for UNIMARC would satisfy the requirements for the Common Communications Format. A few additional modifications would be in order.

The differences between the MINISIS present capabilities and the UNIMARC requirements, and any recommended software changes, are described below.

Problem - MINISIS uses the field as its basic element. A field may be a basic field (one tag) or a "group" field composed of a maximum of nine subfields, each identified by a tag. UNIMARC also uses the field as its basic element and the field also may be further subdivided into subfields. However, in UNIMARC each subfield is preceded not by a tag but by a single specified character called a subfield identifier and any alphanumeric character, called a subfield code. There is theoretically no maximum number of subfields for a given field.

Solution - The UNIMARC subfield identifiers and subfield codes could be translated to a MINISIS group field, i.e., a subfield within a field assigned a unique tag. For those few UNIMARC fields that contain more than nine subfields, the field could either be redefined as two or more MINISIS group fields or, where this is unacceptable, be handled by embedding the UNIMARC subfield identifier and subfield code as part of the actual content data.

Problem - MINISIS does not permit repeatable subfields, i.e., a subfield tag cannot appear more than once within a field. UNIMARC does permit repeatable subfields, i.e., the same subfield identifier and subfield code may appear within a field as many times as required.

Solution - The repeatable subfield problem could be handled by a variety of techniques, depending upon the efficiency of processing. The possibilities that exist are 1) eliminate repeatable UNIMARC subfields, 2) combine UNIMARC repeatable subfields into one subfield, 3) define the

UNIMARC repeatable subfield as a MINISIS tagged subfield, 4) embed the UNIMARC subfield identifier and subfield code as part of the content data.

Problem - MINISIS allows a maximum of 256 fields per record with each subfield counted as a field. The number of UNIMARC fields is a function of the number of characters (99,999) permitted per record.
Solution - The number of UNIMARC fields in MINISIS could be limited to 200, leaving 56 for local use fields, thus meeting the MINISIS limitation of 256 fields. A generalized archival approach was established whereby data in UNIMARC fields not included in the 200 could be captured and stored exactly as input in the UNIMARC format. The number of fields handled by this technique could be limited to avoid excessive complex processing and thus poor response time.

Problem - MINISIS does not process fixed field data, i.e., data which can be described by a specified number of characters, such as language or country codes. UNIMARC permits such fixed fields.
Solution - Fixed field processing could be accommodated by adding a module of special software for this purpose.

Problem - MINISIS does not use indicators, a character(s) at the beginning of each data field which provides additional information about that field. UNIMARC does include indicators.
Solution - Certain UNIMARC indicators, depending on institutional requirements, could be eliminated or, if necessary, handled as the first tagged MINISIS subfield.

After the feasibility study was completed with positive results, the author, representing the Program Management Committee, attended a meeting with IDRC management, including Dr. Godfrey. IDRC concluded it was interested in supporting the modifications required in MINISIS for processing UNIMARC records. IDRC requested that IFLA fund a contract for Elaine Woods to consult with the IDRC staff on the bibliographic aspects of UNIMARC and to prepare user documentation for the UNIMARC version of MINISIS.

A proposal for funding was submitted to the Council on Library Resources, which approved the proposal and provided the funds to IFLA for the next phase of the project. IDRC is supporting the actual software development.

Those of us in IFLA and IDRC who have been involved with this new phase of the MINISIS project are excited by what has already been accomplished and are awaiting the completion of the software changes to make the UNIMARC enhancement of MINISIS an operational reality.

There will then be the possibility of information agencies in different countries providing more varied and more extensive services, for example:

--creating records for national bibliographies in accordance with accepted international cataloging practices;

--analyzing periodicals and making suitable abstracting and indexing records for input to specialized data banks for national and international use;

--distributing records for international exchange;

--accepting records from other national agencies or from international data banks.

IDRC, in developing MINISIS and making it available and operational worldwide, has made a notable contribution to the development of our expressed desire for a worldwide network of information services. The enhancement of the system so as to permit the processing of records in accordance with UNIMARC and, hence, the extension of the services that organizations can provide should do much to open up new opportunities for world wide exchange and resource sharing.

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THE POSSIBILITY OF A CONFLICT BETWEEN FONCTIONAL LIBRARIANSHIP AND THE NEEDS OR NECESSITY OF ADVANCED INFORMATION TECHNOLOGY.

by

Peter N. CHATEH

This paper which is far from an academic one on the subject is meant to provoke discussions. It is so because of several reasons. Although I prepared the outline for it, is was the third I had in my order of preference. Secondly, I have tried to translate the French topic into English. Thirdly, I worked with almost no literature on the subject. Fourthly, I needed to send out questionnaire in order to draw certain conclusions. But this was not possible due to the short time within which I had to work. However, I am using my professional knowledge in librarianship to write the paper. In any case, a paper, how good it may be, is meant to provoke thought and discussion especially in a forum of renowned librarians as this.

To start discussion on the subject, we have to look at certain basic principles. The question of technology as applied to information is a very wide subject of debate today. When one takes the developing and the developed countries, it will still lead to debate.

Moreso, we have to take into account the type of library, its size, the material it holds and the public it serves.

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In the technologically advanced countries where libraries are highly computerised there are the questions of manpower, and the question of reduction in the personnel who lack certain skills. Debate is also on whether this advanced technology with the cost in machines can replace human labour.

In these technologically advanced countries there is the debate whether the users really want or not to use the machines at their disposal. It is quite often debated if users want to use the microfiche readers instead of the book or printer material itself. But when the material desired is only in this form, the users of big libraries have to use the readers.

When we turn to the developing countries the questions are also numerous. Shall we use technology ? For what part of the library service ? What type of libraries need this advanced technology ? Is it not even cheaper in these countries to use the cheap manpower available for library operations.

Giving the present infrastructure in the buildings, one begins to ask the question if there is even enough sitting space in some libraries for users and places for the machines. All these debatable questions or points find their place in the discussions. "What should be the place of automation in University libraries in developing countries".

One of the key words to consider is functionality. The aim of any library that wants to be worthy of the name is that it should function. That is to say it should render service rapidly to its clients. It is the quality of service rendered that any judgment on the library will be based. If the internal services are well organisad, be it an automated library or not it may render good services. The user does not know and does not want to know what happens "behind the screens". He wants only his service. If the machine is fed with wrong information it will give back wrong

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information. So, if the services are well organised these would lead eventually to rapidity in use. This is why libraries are automated. The main aim is to send out information rapidly. A functional library is therefore one that serves its users rapidly.

We may liken this to a patient who goes to the hospital for an operation. When he has been operated, what he wants is that the "disease is removed". He was "dead" at the time of the operation and did not know who were the people or machines involved in the process. When the user gets what he wants and at the time he needs it, he may say the library is working well. The attittude of the user can also be an indice for the librarian to determine how functional his library is. But he always needs other tools to evaluate the work. A library cannot always rely on the users because some users do not even know what to ask for and when to ask.

In a word then, it may be said that one has to determine first what a functional library is and go on to discuss whether a functional library need advanced technology or is there possible conflict between the two.

Before we go further into the subject, it is necessary to talk a little about technology in libraries. One of the earliest ways or use of advanced technology in libraries was the introduction of microforms. Microforms date to 1839 but libraries started making microforms copies of documents only in the late 1930.s. The first aim was to couvert documents into microfilms for the purpose of economising space and preservation in this form. It might have been discovered at the time that original documents in paper easily decomposed. By 1950 there was the realisation that the microforms could be used not only for preservation but also for current use. By 1960 it became more widespread and microfilm readers and reader printers became more abundant and cheaper.

It is noted therefore, that invention and use of the microforms came as a matter of necessity. The first necessity

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was to preserve knowledge. But later it was found it could become a common thing in use. This has now gone through several stages of development and improvement.

The most important were between 1970 and 1980. Between 1970 and 1972 there was standardisation of microforms and by 1980 they were being combined with other technologies - data processing, word processing, facsimile, transmission, etc.

With technological improvement, micropublishing came into use. The cost of printing has been reduced, it is easier to send a microfiche or microfilm, to a user at a distance than a printed distribute in microfilm, to a user at a distance than a printed book. Retrieval is easier than the documents. It is cheaper to distribute in microfilm than in other forms. Other advantages include space saving, ease in handling, uniformity in filing and finally it is thought that microforms have a longer durability than traditional forms.

The discussions on microforms has taken some time going into historical perspectives. Perhaps computers have done even greater good in libraries. With these "machine brains" it is possible to store a lot of knowledge and retrieve it in seconds. They could also be consulted from places thousands of kilometres away. They have not only reduced interlibrary relations to mere good morning, but have made the task of users less boring and that of library staff easier in a way. In some cases machines have tended either to reduce the number of people doing certain jobs or replaced them altogether. This is a strong point against them by libraries in the developing countries where there is cheap manpower in abundance.

We can therefore say that in the developed countries where librarianship is highly developed and many library services are either computerised or microforms have been introced to replace the printed paper, that certain aspects of human labour have been replaced to an

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extent by the machines. In these circumstances two main things come into play. Very highly skilled people have taken up job positions in libraries. The second phenomenon is that some of the unskilled people have been put off job.

In the developing countries where libraries are only being developed, there is not yet, in most cases enough trained manpower. The trained manpower available can easily train on the spot, for example, to handle some minor jobs. When we calculate in real cash the cost of purchasing machines and the trained people to handle them and put this side by side with the numerous semi trained people that can handle the jobs, it might be found that it is cheaper to run without sophisticated machines. This part of the exposé needed the use of a questionnaire. Another problem is that in the developing countries the machines do not only drain on the meagre budgets of the institutions but repairs are uncertain. As an example, where as, photocopying machines are hired in developed countries, they can only be sold in developing ones. Even when sold with guarantee, these are never respected. I remember my Rank Xerox guaranteed machine stood for over two months waiting for repairs to be done.

In summary then, certain aspects come into play when we consider the developing countries : the fact that labour is already quite cheap and can handle library operations in the traditional way ; secondly the machines would cost much more than hiring people to do certain aspects of the jobs ; thirdly librarianship is not as advanced as to warant automation in most cases ; fourthly there would be a lot of financial imput to keep the machines running when they are bought since technicians have to be hired from abroad for repairs.

It would not be wise to talk of conflict in a global way. It is not a world wide phenomenon. Conflict between advanced technology and functional libraries where it does axist, will differ from country to country in the highly developed countries. There are differences between the highly developed countries and the third world. Even in the so called developed countries some find themselves in a comparatievely undeveloped situation when library development

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is concerned. We are therefore, in this paper going to take the developed countries together and the developing ones separately.

In the developed countries the use of technology in libraries is taking prominence. This is more so in the United States of America, Great Britain, Canada and West Germany. We have little access to Japan at the other end of the world, but given its state of development as evidenced from the other technological fields, libraries there could be highly automated from the literature read. Many other countries in Europe still lag behind in technological development. Some of the developing countries in Latin America are very advanced in the information science.

To talk therefore of conflict, the attempt should be to separate the sheep from the lamb. We cannot take both the developed, countries and the developing ones together. Where as in the ones, there is or could be a conflict the others are still forging their way.

When we talk about technological advanced countries we find that the conflict may not be whether the libraries are functional or not but the complementability of technology and manpower.

In this paper we have discused only automation or the use of computers. Audio-visuel material occupies a big place in libraries now. Material like films, slides, photographic material, Vidéo - cassettes that used to be considered as "strangers" and to be found elsewhere now occupy a prominent place in libraries.

The main aim of the introduction of "machines" to libraries is to facilitate research. Whether it is the computer, the audio - visual materials or others, the basic aim should be to do the same job. Another important aim is the perservation of material in other forms.

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It has been tasted that microforms can keep well for over 99 years. Also, and very important is space economy.

All this does not go without certain repercusions. When a library is highly automated it means that some of the things that were hitherto done by hand would be done by machines. The direct consequences are clear. The library may recrute fewer people. It will recrute people who are highly skilled in the "machines". Some of these people would be non professional librarians. The consequence is that the number of non professional librarians will increase in libraries. These people have a technology to defend. Therefore account is taken of them when certain decisions are being made. They are now in a position of strength to influence library decisions. Some of them are linked to the companies manufacturing "library machines". Besides this, they have to defend the use of "machines" in order not to be thrown out of job. It goes therefore without saying that the first conflict will be with personnel. Second conflict, some users do not know what or that they should normally as staff to help them use the services. Some of them, after making a few efforts give it up entirely. A University lecturer from a highly technologically advanced country told me he gave up using terminals in a library for research. He only got what he wanted when library sciences students were on the machines. On the other hand, some traditional research fellows do not just want to use the machines at all, either they be the microform readers or not. Some talk of eye strain.

To talk therefore of conflict between a functional library and high technology, one must say that the aim of introducing high technology has been to make the library more functional. So far as these countries are concerned, one can only say that you cannot apply a technology without disturbing human labour. Emphasy may shift from human labour to machines. What is more important is whether or not users are getting the services they require. They want to be served rapidly.

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The aim of all technology is to ease human endeavour. But in the process of doing this, conflict may arise (perhaps only psychologically) between the users of the "machines" and manpower hitherto needed to use direct human labour.

We now turn our attention to libraries in the developing countries. In these countries there are problems to start with. In some of these countries there is no importance given to libraries. Some of them have given libraries the place they deserve and they have become highly developed.

As in the developed countries, the use of high technology is meant to simplify library work and also to render the retrieval fast. The first thing the introduction of high technology will do is to render library services faster and more competitive. When libraries can compare favourably with other services their role would be more and more understood and appreciated. This may consequently attract government funds. Nevertheless inadequate funds is one of the problems of libraries in developing countries if not world wide.

When funds are being reduced it is libraries that suffer most. Before we begin to talk of conflict, it is necessary to note that even these do not have the necessary attention.

We have already said that a library can be functional without being necessarily automated. The difference between a manual functional and an automated library is that, the automated one will "answer questions" faster than the functional but manual one. Another difference is that the automated library that gives out required information rapidly requires less manpower than the unautomated one. The "machine" is capable of keeping plenty of information in memory and giving it out at will and rapidly.

In general, labour is quite abundant and cheap in the developing countries. A library needs to have dynamic and duty minded personnel, and the services rendered would be rapide. In this light then, we can talk of a functional library. When

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automation is used, it inevitably has to cost more to the library.

Since it costs more to the library, it would mean that the library may cut down on certain services and the human labour. The question now is, is it worth it cutting down on human but cheap labour in favour of machines ? Yes, machines make work faster but at the expense of human labour. Perhaps it might be necessary to develope other manual methodes that will render the services speedier, more raliable and less boring. But libraries in the few countries that have the financial means and knowhow cannot stop developing. They would have to develope these high techniques. It is evident that some human labour would be replaced. More technologically qualified people would have to be employed. This will lead to the replacement of less skilled manpower by these few but more efficient people.

We may say that whenever automation will be introduced in libraries, it will change the manpower balance. This is good in developed countries as well as in the less developed ones. But whereas the unemployment created by the people laid off in the developed countries could be that of people who have received some training and perhaps worked for long, in the developing countries, in would be people who have either only received "on the spot" training or semi-technical training and just started career. The people are or could be progressively replaced by highly qualified technicians. But the developing countries have to be able to live up to challanges of the transfer of technology.

In Conclusion we may like to state that whatever effect, technological development has on a library depends on the state of development of the country. When we talk of the effects of automatisation and its effect on manpower, it is relative. In the first place the aim of the introduction of high technology is to make a library more serviceable. When a library can render rapid service and is able to retrieve information instantely both the users and the staff feel they are doing their job. In reality we may not talk

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of conflict but of the fact that automatisation introduces new and desirable elements making "machines" help man and leads to the "survival of the fittest". Only human labbur is being replaced by highly skilled labour. Perhaps we may talk of meeting the challenges of technology rather than conflict between functional libraries and the application of high technology in libraries.

REFERENCES :

1/ HOUGHTON, Bernard
The Management of change, studies in the evolution of library systems. - London : Give Bingley, 1972.

2/ INTRODUCTION to library administration / by K.W. Neal, ... - Surrey : King Print. - 58 p.

3/ Libraries as resource centres : papers read at combined week-end conference of the South Western and London and Home countries branches of the library association held at Bournemouth, 28 th - 30th April 1972 under the joint chairmanship of / H.E. Radford, ... and W.S.H. Ashmore, ... - London : Library Associations ; Home countries Branch, 1973. - 51 p.

4/ Marketing library services ; strategy for survival / Joyce A. Edinger.
In : College and Research and library. Vol. 41 N° 4 July 1980 p. 328

5/ Understanding scientific literature : a bibliometric approach / Joseph C. Donohue. - Cambridge ; Massachussetts ; the MIT Press, 1973 - XII - 98 p. : fig.

6/ University librarianship / ed. by John F. Stirling. - London : The library association, cop. 1981. - xv - 229 p.

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124-INF-6-E

Inf. Tech
(3)

IFLA GENERAL CONFERENCE: NAIROBI 1984

DIVISION:

SECTION: INFORMATION TECHNOLOGY

United we stand; Divided we fall: the benefits to libraries of international standardisation in videotex

by

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Meeting 91

There may be some people who do not know what videotex is and there will be others who only think they know. This situation probably is not surprising as eventhe experts find it difficult to agree on a single definition.

Perhaps the most appropriate is that used by Rex Winsbury, doyenne of writers within the videotex industry. In his view, "Videotex is the generic name used for electronic systems that use a modified TV Set to display computer-based information. It includes interactive systems using, normally, a TV Set and the telephone line which can be referred to as interactive videotex or viewdata. It additionally covers broadcast videotex or teletext".

Whilst teletext is accepted universally as the term for a broadcast videotex service, use of the word viewdata or videotex for the inter-active medium is dependent on where you live. North Americans and many Europeans would call it videotex, whilst other parts of Europe and the UK would use Viewdata for the inter-active systems.

That, at least, should ensure we are all talking the same language in videotex terms! That was indeed one of the objectives in the mind of the person credited with inventing videotex.

His name was Sam Fedida, an engineer working for the Research Laboratories of the British Post Office, now British Telecom. His specific objective in 1971 was to find a means for British Telecom to increase revenue from its public telephone network by increasing traffic (the number of calls made) in off peak periods. Sam's belief was, and still is, that people needed information for both social and business purposes. He believed that an ideal way of delivering that information was to exploit a combination of the two facilities which 95% of British homes possessed: the television and the telephone, hence VIEW DATA.

Like most gigantic bureaucratic organisations, the Post office was slow to appreciate the value of and adopt this very simple concept. Considerable testing and development work proceeded during the early 1970's andthe British Broadcasting Corporation (BBC) began adapting the concept for a broadcast network to produce teletext. However it was not until 1975 that the real benefits of Sam Fedida's invention began to be appreciated in the outside world.

France and Federal Republic of Germany were two of the early countries to follow the British lead. By the time the public and business people in the UK were seeing the embryonic Prestel (British Telecom), Ceefax (BBC) and Oracle (Independent Broadcasting Authority) services on their TV Screens in 1976/77, France and Germany had commenced planning their own similar versions of the technology.

Now, in 1984, more than 30 countries are using videotex, either viewdata and/or teletext. There is concentration within Western Europe (the countries mentioned together with, eg, Netherlands, Austria, Scandinavian nations, but also in the Far East (including Japan, Hong Kong, Malaysia, Singapore), Australia, South Africa and the American continent.

The use made of videotex in the various countries is considerable and covers a wide range of applications. But as a general point, viewdata and teletext are used where one or more of their particular features can be exploited:

1) the equipment is inexpensive relative to conventional terminals and VDU's;
2) telecommunications costs are lower than for computers;
3) the software required is inexpensive and generally reliable;
4) the systems are easy to use by those without any form of computer training;
5) the use of colour and graphics assists the assimilation of information;

6) the technology is flexible, videotex terminals are capable of doubling as terminals for many on-line information services;

7) teletext has no direct cost to be passed on to the user;

8) viewdata is inter-active allowing the user of the information to "respond" to the provider, eg for electronic mail;;

bookings;

shopping and banking from home, etc.

The markets in which videotex has therefore proved particularly beneficial include:

a) travel industry where the ability to book holidays directly and speedily has been of great significance (eg in the UK 5000 travel agents now have videotex terminals)

b) home banking, a number of banks now operate a service allowing customers to check bank balances, pay bills, transfer funds through a TV set in their own homes or office.

c) teleshopping, enabling people to buy wine, book theatre tickets, make hotel reservations, etc.

d) motor industry, many major international car manufacturers operate stock locator systems to give individual car retailers information on the location of specific vehicle models or to speed up availability of spare parts. The pioneer was British Leyland in the UK who as early as 1981, had a stock locator viewdata system in operation in more than 1000 garages nationwide.

e) retail trade, sophisticated management information systems using viewdata are operated by many large chains of department stores, eg Debenhams in the UK.

f) News (international, national, sport), a service provided particularly well by national teletext services where the larger usership (eg 5.6 million people in the UK) justifies the employment of teams of journalists to keep abreast of developments.

c) TV programme information , a natural service for broadcasters to provide on their teletext services

d) local government, a rapidly increasing number of applications are being developed using viewdata, notable examples are in New York State, France and UK where 29 local authorities have private videotex systems and even more use Prestel.

Within local government, librarians have tended to take the initiative in exploiting viewdata for the benefit of the community. In the UK the British Library provided research funding in 1978 to enable 6 public libraries, Birmingham, Norwich and four in London, to test (a) the value of Prestel as a reference library facility to complement information held in book and journal format and (b) the potential of viewdata as a medium for provision of a large scale local information service.

That research having been largely successful, a follow-up study was undertaken by LASER (London and South East Library Region) in 1980 in a wider range of libraries and a "Prestel for the People" project also looked at use of viewdata in other community locations (eg Post offices, health centres, job centres).

These projects led to a number of local authorities (Notably Kingston upon Thames, North Hertfordshire and Northamptonshire) commencing large scale public information services using private viewdata systems to enable the benefits of Prestel technology to be linked to the cost-savings of using their own computers. These and other local authorities provide in-depth information including:

rail and bus timetables;

local medical facilities;

details of local cultural and sports organisations;

educational facilities (including bookings for adult education classes);

church and other religious services;

booking facilities for leisure centres (eg squash courts);

council meeting arrangements and decisions;

book reservation facilities;

social welfare services

The same councils and others have exploited their viewdata systems further by making use of the inter-active facilities for electronic mail, stationery ordering, supplies ordering withinthe Council's management. Many libraries also access on-line databases such as POLIS (parliamentary information), ACOMPLINE (urban information) and many on-line hosts via their viewdata terminals.

There is great potential for libraries and local authorities to exploit viewdata even more to ensure that information services to the public are improved without additional cost, the same rapidly updated inforamtion can be disseminated via terminals in any number of locations without additional staff resources. Also in house management use of information can be provided at reduced cost through viewdata.

The problems for libraries and a thousand other groups of viewdata users emerge when the question of videotex standards is considered.

There was initially one main standard, the Prestel standard for viewdata and Ceefax for teletext. Many countries (eg Federal Republic of Germany, Netherlands and Sweden) decided to take advantage of the huge commitment of research resources by the British industry and merely adapted that standard to their requirements.

Other nations decided, however, for various reasons that the screen image, an alpha-mosaic system, was insufficient for their needs. Therefore France developed a slightly enhanced graphics system for theier Teletel and Antiope viewdata and teletext services; Japan necessarily had to cope with the Japanese alphabet in devleoping CAPTAIN and Canada

required higher resolution graphics which led to their TELIDON system. A little later, the USA adapted Telidon slightly to produce NAPLIPS (North American Presentation Level Protocol Syntax) which uses alpha-geometric coding.

CEPT (Council for European Posts and Telecommunciations) have tried to achieve greater uniformity but so far the introduction of CEPT level 3 by Germany, Austria and South Africa has actually for the present complicated matters further.

But the various bodies within the industry are trying to achieve agreement between the various interest groups represented within the attached appendix as level numbers 1-5:

Level 1 - Alpha-Mosaic:Prestel/Ceefax

Level 2 - Teletel/Antiope

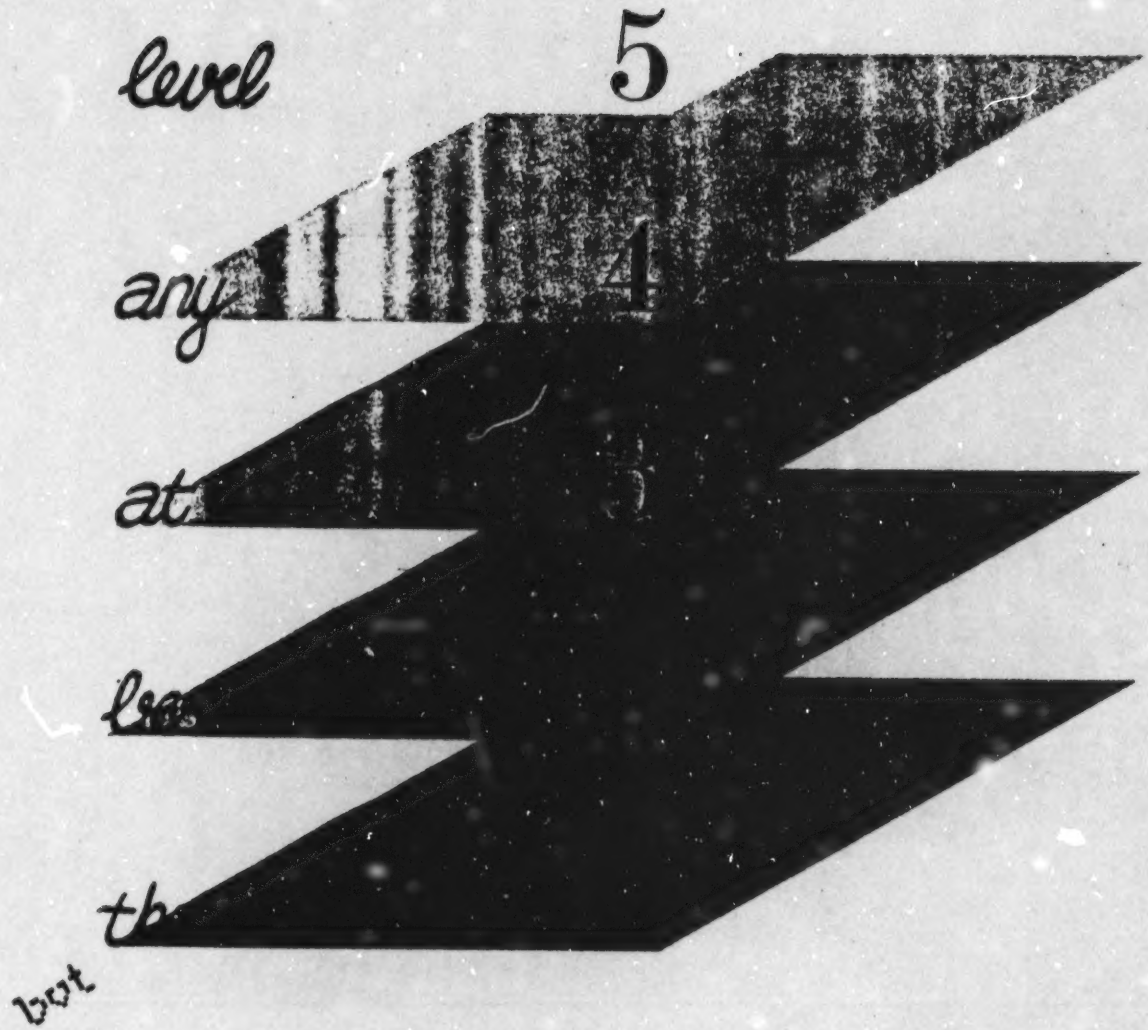
Level 3 - DRCS (Dynamically Redefined Character Sets) - West Germany etc

Level 4 - Alpha Geometric - Canada/USA

Level 5 - Photovideotex.

There are also attempts being made to make equipment multi-purpose for two or more standards.

Librarians and Information workers have an important role to play in ensuring that the dangers of incompatibility which affect both cross-border flow of information and the cost of equipment (resulting from duplication of research and smaller scale manufacture) are not realised.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Multi-level standards explained

Teletext and Videotex are complementary systems, and both are already in extensive use in the United Kingdom, and many other countries.

Both systems use a suitably equipped television receiver: teletext signals are broadcast to air or for cable reception in the television signal field blanking interval, and videotex uses the telephone network.

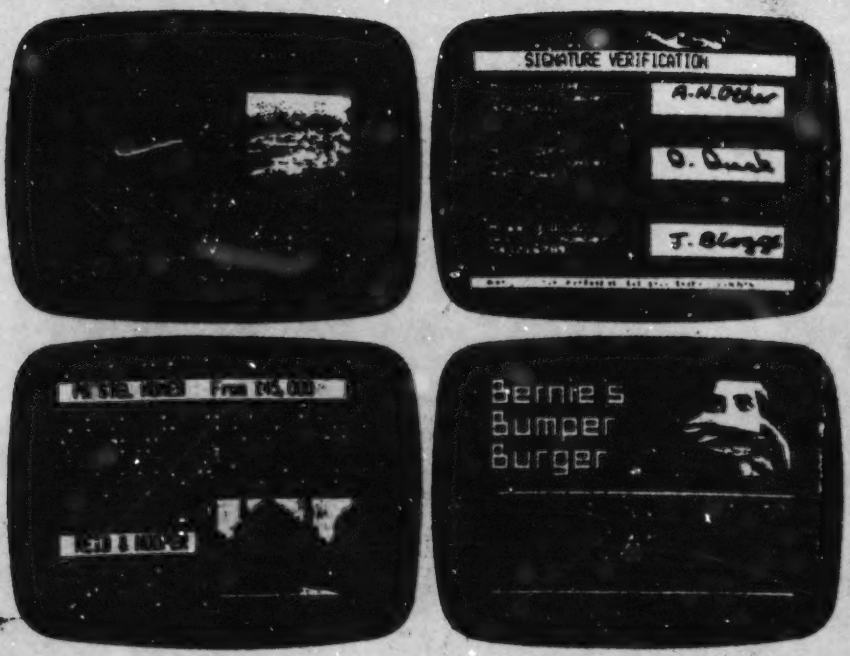
The multi-level teletext standard has been defined by UK technical authorities and submitted to the various national standards bodies and the US Federal Communications Commission (FCC). It takes into account all currently conceived and projected technology.

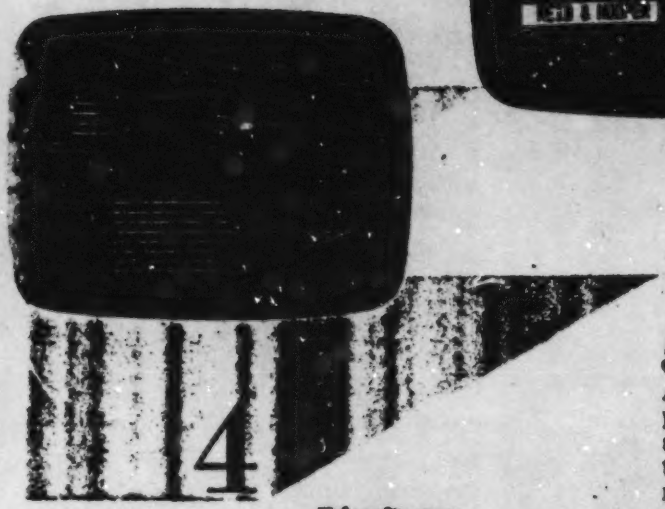
An important, integral concept is that of compatibility. The enhancements detailed in the levels of the standard are downwards compatible. Thus, although new sophisticated services will be introduced, they will display a simpler version on existing receivers in the field. Upgrading can be achieved simply, ensuring rapid acceptance in the market place, where all levels can coexist.

1 Level 1: Current Public Services. This is the standard of all videotex and teletext services in current public use, and is field proven on a large scale.

It comprises a basic character set, of a selected Roman based alphabet, together with mosaic graphics, and a comprehensive range of display attributes such as colors, double height and captioning. The display format is 24 rows of 40 characters.

Level 1 is compatible with the more advanced levels, and is the most cost effective option.





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Illustrations provided by
Mullard Limited
British Telecom
John Knill

Level 4: Alpha-Geometric Coding At this ..., the British teletext system ...ides for alpha-geometric ...g methods, of which Tel- the Canadian teletext ...lopment, is an example. ...a intelligence in the TV set ...prets the codes to produce ...nts, lines and surfaces on ...television screen. In specia- ...d markets this method may ...seful when particular types ...ictorial display are required.

Telesoftware
Telesoftware is the name for transmission by teletext of computer programs. These programs are transmitted using a series of linked pages which may be received by the UK teletext decoder irrespective of the sophistication of the computer program. Upon receipt, the teletext decoder feeds the program into a computer in the business or home location, rather than displaying it on the television screen.

5 Level 5: Alpha-Photographic Transmission
At this level color pictures of photographic quality, full screen or set in text, can be transmitted. The user can receive advertisements, for example, illustrated by a photograph of the product for sale. Less sophisticated receivers will display the associated text and simple pictorial graphics.

For further information please contact

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USA

Tel (212) 599 0828
Telex 238539

About these standards

The Economics
The system defined by these specifications can be provided much more cheaply than others of comparable performance. The cost advantage is maintained throughout all levels, at both the information provider and the receiver ends.

Ruggedness
These systems have been shown to be the most reliable at the fringe areas of reception, and also to be less susceptible to interference. Under extreme conditions of distortion, or poor signal level, the fixed format employed will localize any errors.

Captioning
This facility is an inherent feature of the teletext system from Level 1, and is presently in broadcast use providing captions for the hard of hearing, for subtitling foreign films and for language minorities. Several languages may be transmitted simultaneously. They may take any shape or position on the screen, and may be synchronized with the program.

Experience and Availability
Systems operating to these standards offer another substantial advantage over their international competitors in that they are backed by extensive operational experience, that no others can approach.

The teletext service has been operational in the UK since 1974, and most Western European countries have adopted or plan to adopt the standard.

The videotex test service opened in the UK in 1978, and a full public service in 1979. Now a further eleven countries are operating trial services using these standards. No other system has a comparable degree of international acceptance.

127-INF-7-E

MINISIS/UNIMARC Interface - Its Impact on Libraries

by

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IDRC

The International Development Research Centre (IDRC) is a development aid agency created in 1970 and funded by the Canadian government, but overseen by an international Board of Governors. The principal mandate of IDRC is to support research into the application of science and technology for the socio-economic advancement of Third World countries. This goal is pursued primarily through project support to research and research-related institutions in developing countries. Project funding amounted to nearly $80 million CAD in 1983. About 80% of IDRC projects involve research in the agricultural, health or social sciences with information science projects comprising a further 15%.

The Information Sciences projects most often assist in the establishment of new information activities in Third World countries to serve researchers and policy-makers. Less frequently projects involve information science research or the development or enhancement of information tools. The MINISIS computer software is the most notable example of information tool development by IDRC.

ISIS

The roots of MINISIS are found in ISIS (Integrated Set of Information Systems), a generalized information management and retrieval software

package developed in the late 1960's by the International Labour Office in Geneva. This software offered powerful capabilities for managing structured texts, including bibliographic records, on the IBM 360/370 series of computers. Demand by member countries for access to the software brought the package into the semi-public domain by the 1970's and developing country institutions approached ILO, UNESCO, IDRC and other agencies for assistance in the installation and implementation of the ISIS software, in most cases, for automation of specialized information services. ISIS is more efficient in the information retrieval, indexing and abstracting features demanded by special libraries than in the acquisitions, circulation and other library administrative functions needed by many libraries.

UNESCO has since assumed responsibility for ISIS and has developed and distributed widely its CDS(Computerized Documentation System)-ISIS version which operates on OS(Operating System)-type IBM system configurations. IDRC, on the other hand, developed and supported a DOS(Disc Operating System)-based version of ISIS until 1978 when its own operations were transferred to MINISIS. Although distribution has continued, a shared DOS version has not continued to develop as has CDS-ISIS.

MINISIS was developed by IDRC essentially to make the ISIS functions available in software which would operate on less expensive minicomputers and to incorporate into the software, features which would further meet the needs of an international and varied user community. Design and development of MINISIS began in 1975 and the first version of MINISIS (version A) was released in 1978. Currently, version F is distributed and the software is installed in more than 95 institutions in 22 countries. Commercial distributors supply direct services to developed country users and IDRC supplies the training and services to non-profit developing country institutions who receive the package at no charge.

MINISIS Design

MINISIS was designed to be functionally compatible with ISIS (Valantin, 1981), but its internal design is very different. Many factors were taken into consideration in the design work (Daneliuk, 1978). Among the foremost were requirements that the system possess:

- general applicability - the system should be as general purpose as possible;

- modularity - the system should be totally modular to promote ease of maintenance and extension;

- independence - the applications functions should be independent of the database management functions;

- user considerations - (a) the system should be flexible in that it should be capable of handling data in almost any physical form, (b) the system should be simple to understand so that it could be implemented and used with minimum effort, (c) a user-attractive language should be provided so that users could really be users; and (d) the system should be able to provide a wide variety of outputs;

- mission orientation - (a) the system should have the capacity to accept outputs from other information systems; (b) the system should be viable within a small organization; and (c) the system should be compatible with other international systems, specifically ISIS and AGRIS; and

- cost-effectiveness - the basic system must operate efficiently on minicomputers and be completed within 2 years (i.e. by 1978).

Following the extensive preparatory studies in 1975/1976, it was decided to implement the system on Hewlett-Packard (HP) 3000 minicomputers and to develop a relational model database management

package which satisfied the requirements. The software was written in SPL, the Systems Programming Language of the HP, and closely linked with the MPE (Multi-Programming Executive) operating system of the HP to achieve a high degree of efficiency in the software. As a result, the software is not portable to other types of minicomputers.

Currently, the MINISIS system consists of 20 processing modules which can be used online or in batch mode to manage and access databases. No programming is necessary to develop most user applications, though a few large users have done some limited programming. Databases are defined and generally managed using the DATADEF processor. The system is very flexible and database definitions can be extensively modified without reloading the data.

Some limitations are imposed by hardware and software on the complexity and size of records. No more than 256 unique fields and/or subfields can be defined for a database. A maximum of 9 subfields are allowed within a field and subfields are not repeatable within fields, though fields themselves are repeatable. It is these design limitations in particular that restrict the compatibility of MINISIS with full-scale MARC. Physical records have a maximum size of 4096 bytes, while logical records may be as large as 32Kb. Large files containing several million records are feasible although to our knowledge, the largest so far implemented in MINISIS is about half a million records.

End users access their databases using the processors ENTRY, MODIFY, QUERY, COMPUTE, INDEX and PRINT as required and permitted by the security profile established by the database manager. For example, new acquisitions records would be entered initially using ENTRY and any later updates (e.g. full cataloguing) would be made using the MODIFY processor. QUERY, which includes full Boolean operators, an SDI (Selective Dissemination of Information) subprocessor and many other facilities, might be used to select a subset of orders which can be sorted in INDEX and output to any device using formats defined with PRINT.

It is possible to manage most library functions using a sequence of the end-user processors, but some operations such as circulation cannot be managed efficiently. Therefore, a few large MINISIS installations have developed their own specialized processors to meet their specific needs. Examples are serials check-in, public catalogue access and circulation processors. When these user-made programs are sufficiently developed, they become available to other MINISIS installations through a user-contributed library of software.

Just as its predecessor ISIS, MINISIS is most suitable for libraries of small to medium size with a greater need for powerful retrieval capabilities than for intensive administrative functions.

Information Exchange

Few bibliographic computer systems use the same record format for internal record storage and processing as is used for the exchange of records on magnetic media. A conversion is done when data is written to output devices for exchange with another system. This is also true of MINISIS, though it is somewhat unique among database management systems in the use of a bibliographic-type internal format. The internal record format of MINISIS was designed to conform generally with the ISO 2709 (International Organization for Standardization format for bibliographic interchange on magnetic tape) record structure. The tag numbering (letter plus 3 digits) system and selected other elements of the record structure were adopted from the UNISIST Reference Manual (Dierickx and Hopkinson, 1981). MINISIS handles data in extended and non-Roman character sets up to 256 characters that conform to 7- or 8-bit ASCII (American Standard Code for Information Interchange) code.

A specific processor named ISOCONV was developed to import and export bibliographic data to and from other systems in batch. This module is driven by user-defined correspondence definitions and was generalized to accept and generate records in a variety of ISO 2709 based formats including ISIS, AGRIS, MARC's and others. Initially, however, only conversions to and from ISIS formats were fully implemented in the processor. Later, a further processor called BATCHIN was added. This processor accepts ASCII files in the format "tag: data, tag: data" and is a convenient means of exchanging all types of data.

Much experience has now been acquired by MINISIS installations throughout the world with a variety of bibliographic data exchange formats. In most cases, MINISIS has proved to be quite hospitable to external data and very capable of outputting data in formats which can be processed by other systems. However, it has only been partially successful in handling MARC data as first demonstrated by the experiences of the Library of the National University of Singapore (Hochstadt, Quah and Ong, 1982) as well as the experiences of Systemhouse, the North American distributor, and some of its sublicencees. Importing data from MALMARC (Malaysian MARC) tapes proved easier, though not fully satisfactory, than exporting data to that format. This was recognized as a serious limitation to the system for many libraries in developing countries.

UNIMARC Interface

In 1982, the International Federation of Library Associations and Institutions (IFLA) opened discussions with IDRC to explore ways in which both organizations might cooperate to enhance MINISIS to handle input from and output to UNIMARC format (Hopkinson, 1983). Coordinated by Henriette Avram on behalf of the IFLA Program Management Committee and with support from the British Library,

Library of Congress (LC) and the National Library of Canada, a consultant, Elaine Woods, was contracted in 1983 to conduct a study on the feasibility of developing a UNIMARC interface to the MINISIS package (Woods, 1983). At the suggestion of IDRC, the new and untried Common Communications Format (CCF) (Simmons and Hopkinson, 1984) which was being developed by UNESCO, was also included in the study.

The principal objectives of the study were to determine to what degree MINISIS is capable of implementing UNIMARC/CCF and to specify which changes could be made to MINISIS to achieve maximum implementation of UNIMARC. The study is detailed and thorough and provides an excellent basis for implementation.

Briefly, the study revealed that, due to original design decisions, it is not possible to efficiently implement full MARC using MINISIS, but the most frequently used MARC fields and features can be implemented with certain modifications and enhancements to MINISIS. The principal problem areas in MINISIS turned out to be:

(1) the limit on the number of tags;

(2) the non-repeating and limited number of subfields; and

(3) limited capabilities for handling fixed fields.

Interface Design

A second project with IFLA is now underway to implement a UNIMARC interface in MINISIS by the end of 1984. This work is being carried out by IDRC computer staff in collaboration with Elaine Woods whose

participation is being generously supported by the Council on Library Resources (CLR).

The primary objective is to develop a UNIMARC interface which will make MINISIS more effective for developing country libraries and will encourage the MARC libraries to adopt UNIMARC as their common exchange format. However, IDRC has decided to generalize the interface to possibly handle other variants of the MARC format. Just as developed countries, many developing countries have adopted national or regional MARC-based exchange formats. Though MINISIS will not promise a compatible interface to each of these, it is expected that the interface will accommodate some with no additional programming by the library and others with a minimum of programming.

Several modifications and enhancements are being made to MINISIS to create the interface to UNIMARC. Firstly, the ISOCONV processor will be extended to handle additional leader elements used in many MARC formats such as record status, type of record, encoding level, etc.

Secondly, ISOCONV will also be extended to handle a special archival field. This will be a user-defined repeatable field in MINISIS that stores, in original form, the tag, indicators and data of fields received in external records which are not needed by the library and are not uniquely defined in their MINISIS database. Alternatively, data required only by an external system could be input directly into the archival field in a MINISIS record for later output to an exchange tape.

Thirdly, table-driven procedures will be added to handle fixed fields with far greater flexibility and efficiency than is currently possible in MINISIS. The user will be able to define and manage multiple (not repeatable) fixed fields such as the UNIMARC fields 100, 105, 110, 115 and 12x or their equivalents in other MARC formats.

Fourthly, special facilities will be added to several MINISIS processors to handle a limited number of MINISIS fields with non-MINISIS subfield delimiters embedded in them. The processors (and especially the display intrinsic) will be able to call a table-driven routine for each field that requires special manipulation of the delimiters and data. Repeatable subfields and more than 9 subfields will be allowed in a field. The table will offer a finite set of basic options for each subfield to generate keys, sort or replace delimiters with user-defined strings (punctuation) each time the record is printed.

Many MARC fields can have repeatable or more than 9 subfields, though the frequency that this occurs may be very low in practice. Because this mode of operation will add a significant processing overhead to MINISIS, this technique should be restricted by the user to the more significant or frequent UNIMARC fields (200-title statement, 500-uniform title, 600-607 subject fields, 670-PRECIS).

MINISIS is not efficient in this specific situation because it has been optimized for general applicability rather than to meet the requirements of a specific application or format. It is also for this reason that MINISIS cannot match the specialized library software packages in many library applications.

It has also been necessary to leave a few UNIMARC components out of the interface. Indicators will not be implemented, though users will have the option of storing indicators in a MINISIS subfield if there is sufficient space in the data definition. Also series/linking fields will not be accommodated, though they can be carried in the archival field. Nor will the system manage the UNIMARC links between records containing the analytic and generic document, though in some cases, this may be possible using the relational joins in MINISIS.

User package

About 30% of the enhancements had been programmed as of July, 1984. When the remainder have been completed and tested in-house, they will be field-tested in a pilot project.

In 1985, the UNIMARC software enhancements will be incorporated into the next standard release version (G) and MINISIS user documentation which are distributed to all installations. Most of the special routines will be supplied to users in source code to enable them to make any further modifications or enhancements needed to meet their specific requirements. In addition, a special manual will be prepared describing the MINISIS correspondence and data definitions and table values which will yield the highest compatibility with UNIMARC. As always with MINISIS, the actual implementation remains the responsibility of the user library which possesses the full flexibility of MINISIS to meet their own needs.

Implications

Libraries that use the MINISIS/UNIMARC interface fully will acquire several capabilities that do not already exist in MINISIS. They include the following:

1. data from UNIMARC records (and perhaps other types of MARC records) can be converted to a MINISIS database without any loss of data and without any programming;

2. fixed fields can be managed in an efficient and user-friendly fashion;

3. the title and statement of responsibility can be compatible in great detail with the conventions of the Anglo-American Cataloguing Rules, Second edition (AACR2) and the International Standard Bibliographic Description (ISBD);

4. subject headings, for example, Library of Congress (LC) headings, can be fully implemented;

5. locally captured data can be converted to UNIMARC records and exchanged with other libraries; and

6. new options in the system can be used to manipulate local fields as well.

Though MINISIS will still not offer the same range of cataloguing facilities that are available in some other bibliographic packages, the UNIMARC interface does represent a major improvement for libraries and is essentially as far as MINISIS can specialize in this direction. The cooperation offered by IFLA to IDRC has ensured that developing country libraries who use MINISIS, perhaps for its ability to handle multiple and special character sets or perhaps for its other features, will not be impeded from exchanging information with libraries world-wide that accept UNIMARC records.

Daneliuk, F.A.; Information Retrieval and Library Management: an Interactive Minicomputer System. Ottawa, Ont., IDRC, 1978. 16 p.:ill (IDRC-TS14e). ISBN 0-88936-170-3.

Dierickx, H. and A. Hopkinson (eds); Reference Manual for Machine-Readable Bibliographic Descriptions. 2nd rev. ed. Paris, UNESCO, 1981. 341 p. (PGI-81/WS; 22).

Hochstadt, P.W.C., Quah, J. and G.H. Ong.; Towards an Online Integrated System at the National University of Singapore Library. Presented at 41st Congress, FID, Hong Kong, 12-16 September 1982. 24 pp.

Hopkinson, A. (ed); UNIMARC Handbook. London, IFLA, 1983. 264 p. ISBN 0-903043-40-8.

Simmons, P. and A. Hopkinson (eds); CCF: The Common Communication Format. Paris, UNESCO, 1984. 185 p. (PGI-84/WS/4).

Valantin, R.L.; CDS/ISIS and MINISIS: a Functional Analysis and Comparison. Ottawa, Ont., IDRC, 1981. 88 p. (IDRC-TS37e). ISBN 0-88936-296-3.

Woods, E.W.; Report on MINISIS/UNIMARC study. Unpublished, Nov. 1983. (Available on microfiche from IDRC).

Translations first

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MINISIS/UNIMARC Interface - Its Impact on Libraries

by

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Abstracts

MINISIS is a bibliographically-oriented information management and retrieval software package developed by IDRC for Third World institutions. It operates on Hewlett-Packard 3000 minicomputers and is currently used by 95 institutions in 22 countries. This paper describes the joint efforts of IDRC and IFLA to design and implement an interface to UNIMARC to allow for compatible exchange of information with libraries using other systems. The major technical problems encountered (fixed fields, repeatable subfields, etc.), the solutions chosen and implications for MINISIS users and other libraries are briefly reviewed. The interface, which will also offer some facilities for handling variants of MARC and CCF, will be ready for distribution to MINISIS users in 1985.

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L'INFORMATISATION DE LA BIBLIOTHEQUE NATIONALE DE PARIS : méthode de conduite du projet ; participation et formation du personnel.

par

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1 - LA BIBLIOTHEQUE NATIONALE AVANT LE SCHEMA DIRECTEUR

Jusqu'en 1981, la Bibliothèque Nationale n'a pu avoir la maîtrise de son automatisation. Très en retard sur ce plan par rapport aux bibliothèques de même importance, elle s'est alors engagée dans la réalisation de son schéma directeur informatique, c'est-à-dire le plan de son informatisation. Très en retard disons-nous, car les tentatives menées jusque là avaient été ou partielles ou très décevantes.

Nous mentionnerons seulement l'édition automatisée, à partir de 1967/68, du fichier de l'Inventaire permanent des périodiques étrangers en cours (IPPEC), géré d'abord totalement en différé, qui a évolué vers une application en conversationnel pour constituer, quant aux publications étrangères, le noyau central du Catalogue collectif national des publications en série.

De grands espoirs avaient été mis, au début des années 1970, dans l'automatisation de la Bibliographie de la France et un projet très ambitieux, conçu pour réaliser une base bibliographique nationale dont le dessin s'inspirait beaucoup de l'O.C.L.C., avait abouti, en janvier 1975, à la publication du premier fascicule préparé automatiquement. Malheureusement, ce projet n'eut pas la destinée qui lui était promise :

- il n'évolua pas : à quelques modifications de détail près, l'application est restée dans le même état qu'à ses premiers jours. Les possibilités très nombreuses du format INTERMARC, utilisé pour structurer les enregistrements, n'ont pas été exploitées.

- il ne fut pas étendu, comme il aurait dû l'être, à d'autres secteurs de la Bibliothèque Nationale : catalogage des ouvrages étrangers et des autres documents reçus par Dépôt Légal, publications en série, publications officielles, etc...

- la base bibliographique nationale en coopération ne fut pas créée.

A cela plusieurs raisons. Le projet devait concerner l'ensemble des bibliothèques. Le service chargé de le concevoir et de le réaliser avait donc des objectifs plus larges que celui d'automatiser la seule Bibliothèque Nationale. D'où une certaine ambiguïté, un certain malaise du côté des services de la Bibliothèque Nationale dont les besoins pouvaient n'être pas considérés comme prioritaires, et, pour l'équipe mixte de bibliothécaires et d'informaticiens responsables du projet, une tendance à travailler en vase clos.

Il y a plus grave encore : un changement intervenu en 1975 dans l'organisation administrative des bibliothèques françaises fit que ce service, qui relevait jusque là du Directeur des bibliothèques de France, - celui-ci étant aussi Administrateur général de la Bibliothèque Nationale -, devint un organisme indépendant de celle-ci, quoique placé auprès d'elle. Des tensions en résultèrent inévitablement entre les deux partenaires ; les divergences de vue ne firent qu'augmenter. La disparition des équipes primitives qui avaient réalisé en langage d'assemblage, sans établir la documentation fonctionnelle des programmes, la Bibliographie de la France automatisée, empêcha toute amélioration de cette application.

L'exploitation de celle-ci dans un site informatique n'appartenant pas à la Bibliothèque Nationale, et l'impossibilité de consulter la base en dehors de périodes limitées chaque semaine, aboutirent à une situation peu viable, même si dans les dernières années beaucoup d'efforts furent faits de part et d'autre pour arranger les choses.

Au début de 1981, une réunion interministérielle soulignait officiellement la nécessité de donner à la Bibliothèque Nationale son autonomie et les moyens nécessaires à son informatisation.

En même temps, étaient fixées les grandes lignes du programme à réaliser, notamment : création d'une base bibliographique où entreraient les notices de tous les types de documents reçus par la Bibliothèque Nationale ; automatisation des services techniques, commerciaux et administratifs de l'établissement.

2 - LA METHODE DE CONDUITE DE L'INFORMATISATION

Nous savons que la réussite de l'informatisation repose sur plusieurs conditions, qui sont en particulier :

- de respecter les "règles de l'art", en appliquant une méthodologie appropriée consistant à implanter progressivement l'informatique, et à faire participer les services utilisateurs à la spécification de leurs besoins,
- de réaliser les réformes de structure nécessaires,
- de sensibiliser et de former très largement le personnel à l'organisation et à l'informatique,
- de manifester constamment, au plus haut niveau de la hiérarchie, la volonté d'aboutir.

En cherchant à ce que ces conditions soient remplies, la Bibliothèque Nationale a voulu se donner toutes les chances de succès.

2-1 - Le projet Schéma directeur

En tout premier lieu, il fallait élaborer le Schéma Directeur. A cet effet, en juillet 1981, un informaticien de haut niveau (I.H.N.) fut mis à la disposition de la BN par le Ministère de l'industrie.

Autour du chef de projet, se constitua une équipe composée d'un conservateur connaissant bien la bibliothèque et ayant été formée à l'informatique, et de deux ingénieurs-conseils appartenant à une société de services expérimentée dans ce domaine.

L'opération, lancée en octobre 1981, devait respecter les principes suivants :

- travailler en étroite liaison avec la direction de l'établissement,
- appliquer une méthode réclamant une forte participation du personnel : la méthode RACINES recommandée par le Ministère de l'industrie pour le Schéma Directeur des administrations françaises,
- aller vite, compte tenu de l'urgence des besoins et de l'ampleur de la tâche à accomplir.

L'Organisation

Selon la méthode RACINES, l'organisation de l'étude reposait sur une structure de travail comprenant :

. un organe de décision, le Comité Directeur, chargé de piloter l'étude et de se prononcer sur les propositions qui lui étaient soumises,

. un groupe de projet, - constitué de l'informaticien et des trois personnes déjà mentionnés - chargé de mener l'étude, de rendre compte de ses travaux au Comité directeur et de lui proposer des solutions,
. des groupes d'"utilisateurs" internes assurant la fonction consultative et le suivi de l'opération dans les services.

Concevoir un Schéma directeur informatique est un des rares moments, dans la vie d'un organisme, où l'on a l'occasion de délaisser les nécessités immédiates et de réfléchir aux questions de fond relatives aux orientations. La démarche consiste d'abord à acquérir, en cernant bien les difficultés, une bonne connaissance du "terrain" sur lequel l'informatique devra s'implanter, puis à faire constamment approuver par l'organisme lui-même (le Personnel, les Services, la Direction) et ses partenaires, les analyses, synthèses et orientations qui découlent des différentes étapes de l'étude.

Les Etapes du projet

Suivant en cela RACINES, le Schéma directeur s'est déroulé en quatre étapes qui se sont toutes terminées par la rédaction d'un rapport soumis à l'approbation du Comité Directeur au cours d'une réunion appelée Point de Contrôle. Commencés, nous l'avons dit, en octobre 1981, les travaux se sont poursuivis jusqu'au début de juillet de l'année suivante.

2-2 - Les Conditions de réussite

Le projet ne pouvait réussir et être pris au sérieux par le personnel et les partenaires extérieurs sans être fortement soutenu par la direction. Le conservateur en chef chargé de mission, responsable des questions d'automatisation suivit minutieusement son déroulement et eut l'occasion de le présenter, voire de le défendre, devant différentes instances.

Il était aussi nécessaire que le personnel de l'établissement se sente profondément impliqué dans l'informatisation. Pour cela, il fallait l'informer dans toute la mesure du possible de l'avancement du projet, le faire participer, et aussi le former progressivement à la technologie qui allait bouleverser ses méthodes de travail.

Pour informer, différents moyens furent utilisés. D'abord la diffusion très large de tous les documents élaborés : comptes rendus et rapports du Schéma directeur ; séances d'information à l'intention des chefs de départements et services ; séances plus larges auxquelles étaient conviées toutes les personnes intéressées ; séances plus restreintes réservées à un service déterminé. Par la suite, les chefs des services les plus directement touchés par le projet ont pris eux-mêmes le relais et ils organisent régulièrement des réunions d'information pour leur personnel.

La Lettre d'information de la BN, publiée une fois par trimestre et systématiquement diffusée dans tous les services, constitua un bon moyen de faire le point et d'annoncer les dernières nouvelles.

La participation prit aussi plusieurs formes. Comme il était normal, les chefs des départements les plus concernés, au sein d'un comité de liaison, furent amenés à donner leur avis à plusieurs reprises sur les idées avancées par le Groupe de projet. De manière moins officielle, ils furent régulièrement consultés sur les points pour lesquels il était indispensable de s'assurer leur compétence.

Une réflexion sur l'organisation de la chaîne du livre fut menée à l'intérieur d'un groupe de travail réunissant des bibliothécaires aux prises avec les problèmes concrets du travail quotidien dans leur service. Pour le chef de projet et la bibliothécaire qui lui était associée, l'expérience fut passionnante. Elle ne contribua pas peu à démontrer le réalisme de certaines idées émises par le Schéma Directeur, et à instaurer un climat de confiance réciproque entre le Groupe de projet et ses interlocuteurs. Des solutions concrètes furent proposées et soumises aux chefs de département, et si des problèmes restèrent non résolus, on reconnut du moins honnêtement leur existence.

L'intérêt de groupes mixtes pour traiter les questions qui se posent a été jugé tel qu'ils sont devenus pratique courante.

Pour faire accepter l'informatique dans un milieu qui n'y était pas toujours préparé, il fut fait appel à une société spécialisée pour organiser, sur le lieu de travail même, des stages de formation générale à l'informatique. Ceux-ci, d'une durée de trois, cinq ou neuf jours selon le cas, ont permis, en deux ans, à environ deux cents personnes d'acquérir les éléments de base. La qualité pédagogique de ces stages, qui alliaient avec bonheur les notions théoriques aux travaux pratiques sur micro-ordinateur, a permis de dissiper une bonne part de l'appréhension souvent ressentie vis-à-vis d'une technologie encore mal connue.

3 - LES CHOIX TECHNIQUES

Faire un bilan de la situation présente en amenant les services à exprimer leur point de vue était une chose, trouver une solution adaptée aux besoins de la Bibliothèque Nationale en était une autre.

Quel outil pouvait convenir à cette bibliothèque unique en France par la richesse de ses fonds, l'importance des volumes traités et la diversité de ses missions ? Des modèles existaient déjà dans les grandes bibliothèques étrangères, mais ne fallait-il pas créer un instrument nouveau, spécifique ? Pour aider à la décision, un centre d'étude au service des administrations se chargea d'examiner, d'après la documentation disponible, les qualités respectives des différents logiciels existant dans le monde : logiciels des grands réseaux nord-américains, logiciels utilisés dans les grandes bibliothèques nationales, logiciels documentaires. L'étude fit ressortir les points fondamentaux suivants :

- nécessité de choisir un outil de catalogage permettant de créer en grand nombre des notices structurées dans un format normalisé de type MARC,

- nécessité d'un outil de recherche très performant apte à traiter plusieurs millions de notices accessibles par de nombreuses clés,

- nécessité d'utiliser des fichiers d'autorité pour maintenir la cohérence d'une base bibliographique de volume important (à terme, plusieurs millions de notices).

La réalisation d'un logiciel répondant à ces exigences représentait une charge de travail considérable et supposait des moyens que la Bibliothèque Nationale était loin d'avoir.

Compte tenu de l'échec de la première expérience d'automatisation, pour rester relativement maître des délais et éviter les risques liés à toute création d'un logiciel spécifique, le Comité directeur, en approuvant en juillet 1982 le Schéma directeur, se prononça en faveur de l'adaptation du logiciel existant qui serait trouvé le plus proche des besoins de la BN.

Parallèlement, la Bibliothèque recrutait son chef du Service Informatique qui prenait ses fonctions en août 1982. Les moyens venaient lentement, mais ils venaient. Il restait donc à passer à l'action.

A l'automne, un groupe mixte de bibliothécaires et d'informaticiens reprit en les affinant les spécifications déjà approuvées et rédigea le cahier des charges de l'appel d'offres. Celui-ci fut lancé en janvier 1983 par voie d'annonce et les sociétés intéressées devaient répondre par une proposition clés en main, pour la fourniture du matériel, du logiciel et des services annexes, en désignant un maître d'oeuvre responsable de la réalisation du projet.

3-1 - Les caractéristiques techniques du système recherché

Le logiciel de gestion de bibliothèque

Dans son premier état, le logiciel recherché devait présenter des fonctions essentielles et des qualités fondamentales :

- fonction de catalogage (livres et publications en série) : le principe était retenu de l'enrichissement progressif des notices par les divers services, au moyen de fichiers de travail et grâce à un outil informatique offrant à la fois rigueur et souplesse et permettant la structuration des données,
- gestion des fichiers dits d'autorité, ceux-ci étant à la fois moyen d'accès au fichier bibliographique et filtre par lequel les notices créées doivent obligatoirement passer,
- fonction d'interrogation de la base mettant en oeuvre des outils d'accès simples, performants et puissants : accès par fichiers d'autorité ou accès direct au fichier bibliographique, recherche booléenne, troncature à droite, recherche par mots significatifs,...

Le matériel informatique

Celui-ci devait être capable de gérer un volume important de données ainsi qu'un grand nombre de terminaux, et de traiter des transactions rapprochées.

La capacité de traiter des caractères riches (jeu latin étendu), aussi bien à l'entrée des données qu'au niveau interne et à la sortie sur écrans et imprimantes, était exigée.

Le temps de réponse moyen demandé était de deux secondes pour l'interrogation et quatre secondes pour la mise à jour des notices dans les fichiers de travail.

Enfin ce matériel devait être suffisamment évolutif pour supporter dans un délai assez bref la connexion d'autres systèmes, internes ou externes, et de terminaux extérieurs.

Volume des données en ligne	1985	1990
Notices bibliographiques	500.000	1.750.000
Notice d'autorité	200.000	400.000

Nombre de terminaux en ligne	1985	1987
Claviers-écrans	100	225
Terminaux imprimantes	12	20

Nombre de transactions fonctionnelles	1985	1990
par an	3 Millions	6 Millions
par seconde	0,66	1,3

4 - LA PROCEDURE DE CHOIX

Celle-ci se déroula en deux étapes :

- une première étape, dite de pré-qualification, au cours de laquelle les différentes offres furent analysées, à la fois sur les plans technique et financier, pour aboutir à la sélection des quatre meilleures propositions.
- une deuxième étape dite du banc d'essai au cours de laquelle les sociétés dont les propositions se trouvaient parmi les quatre premières devaient se soumettre à un banc d'essai.

4-1 - Le Groupe de dépouillement

Un groupe de travail formé de 5 bibliothécaires et de 5 informaticiens (dont 3 extérieurs à la BN) fut constitué afin d'analyser et d'évaluer toutes les offres reçues, sur le plan de la faisabilité, des coûts, des délais, des avantages et des risques des différentes solutions proposées.

Par ailleurs, un Comité de décision était chargé d'aider l'Administrateur Général de la Bibliothèque Nationale dans le choix du futur système bibliographique.

A l'issue de son travail, le Groupe de dépouillement a présenté au Comité de décision un rapport technique de comparaison.

4-2 - Les deux étapes

La pré-qualification

Pour évaluer la qualité technique des offres par rapport aux spécifications du cahier des charges, le Groupe de dépouillement s'est aidé de documents conçus à cet effet qui ont été remplis pour chaque proposition. Il s'agissait de fiches et de grilles : fiches techniques analysant le matériel et le logiciel, fiche financière, grille d'évaluation détaillée, fiche de synthèse résumant les avantages et les risques.

Le travail de dépouillement, qui s'est poursuivi pendant un mois, a consisté d'abord - grâce aux critères de rejet de l'appel d'offres - à éliminer les propositions non recevables.

Après la lecture complète et détaillée des offres reconnues valides, il a été demandé à plusieurs sociétés de préciser certains points obscurs de leur proposition, et, dans le cas de logiciels peu connus ou non encore opérationnels, de se prêter à une démonstration. Les offres ont ensuite été notées, selon les critères établis par des groupes mixtes restreints.

1. Marshall McLuhan (1962). The Gutenberg Galaxy. New York: New American Library, p. 7 and p. 27.

2. Elizabeth Eisenstein (1979). The Printing Press as an Agent of Social Change. Cambridge: Cambridge University Press, p. 75.

3. S. I. Kotei (1975). Some cultural and social factors of book reading and publishing in Africa. In Publishing in Africa in the Seventies, Ile-Ife, Nigeria: University of Ife Press.

4. Lester Asheim (1966). Librarianship in Developing Countries. Urbana, IL.: University of Illinois Press, p. 55.

5. Owen T. Adikibi (1983). The transfer of technology to Nigeria: the case of tyre production. In The Industrialization of Less Developed Countries (eds C. H. Kirkpatrick and F. I. Nixson). Manchester: Manchester University Press, p. 82.

6. John D. Montgomery (1975). The infrastructure of technical assistance: American aid experience in Africa In African Dimensions (ed. Mark Karp). Boston: African Studies Center, Boston University, pp. 139-140.

7. Philip G. Altbach (1978). The distribution of knowledge in the Third World: A case study in neo-colonialism In Education and Colonialism (eds. Philip G. Altbach and Gail P. Kelly) New York: Longman, p. 320.

8. Ibid.

9. Paxton P. Price (1982). International Book and Library Activities. Metuchen, N.J.: Scarecrow Press.

10. Paul Bixler (1972). The charity of books. Library Trends 20, p. 494.

11. Joan Collett (1972). American libraries abroad: United States Information Agency Activities. Library Trends 20, pp. 540-541.

12. quoted in William Cohen (1971). Rulers of Empire. Stanford, CA.: Stanford University Press, p. 204.

13. quoted in Mary Niles Maack (1981). Libraries in Senegal. Chicago: American Library Association, p. 151.

14. Fanny Lalande Isnard (1980). French Cultural Center Libraries (Africa). In ALA World Encyclopedia of Library and Information Services. Chicago: American Library Association, p. 211.

15. For a fuller account see Maack (1981). Op. cit. pp. 188-192.

16. S. Delrieu (1966). Côte-d'Ivoire: Bibliothèque pilote en Côte-d'Ivoire, UNESCO Report WS/0566.21-CUA

17. International Development Research Center, Canada (1982). RESADOC - Exposé et Objectifs de la Proposition, n.p. Toronto: Canada.

18. Andrew W. de Heer (1982). Ghana and UAP: obstacles and prospects UNESCO Journal of Information Science, Librarianship, and Archives Administration 4, p. 28 and p. 30.

19. Harold Lancour (1958). Exporting gift horses. Library Journal 83, p. 3194.

20. Lancour (1958). Op. cit., p. 3195.

21. de Heer (1982). Op. cit., p. 29.

22. C. P. Bourne (1977). Computer-based reference services as an alternative means to improve resource-poor local libraries in developing countries. International Library Review 9, pp. 43-50.

23. Tefko Saracevic (1981). A model for user education appropriate for developing countries. (Proceedings of the 44th ASIS Annual Meeting, Washington, D.C., October 25-30, 1981), p. 41.

24. Ibid., p. 40.

25. Omar Diop (1972). Aptitude des étudiants diplômés à tirer profit des ressources bibliographiques et documentaires. Dakar: Ecole des Bibliothécaires, Archivistes et Documentalistes.

26. J. Tocatlian (1981). Information for development: the role of UNESCO's General Information Programme. UNESCO Journal of Information Science, Librarianship, and Archives Administration 3, p. 151.

27. E. R. Dyer and P. Layzell Ward (1982). The international role of library consultants. International Library Review 14, p. 382.

28. The Library Association, Library and Information Services Committee (1983). Guidelines for consultants working in librarianship and information science LIBSC.54 (amended).

29. quoted in Dyer and Ward, Op. cit., p. 381.

30. Maack, Op. cit., pp. 190-191.

31. F. A. Ogunsheye (1974). Library education at Ibadan University, Nigeria. UNESCO Bulletin for Libraries 18, p. 259.

32. Ali Mazrui (1976). A World Federation of Cultures: An African Perspective New York: Free Press, p. 335.

33. Philip G. Altbach (1977). Servitude of the mind? Education, dependency and neocolonialism. Teachers College Record 79, p. 191.

34. Ali A. Mazrui (1975). The African University as a multi-national corporation: problems of penetration and dependency. Harvard Educational Review 15, p. 192.

Le Banc d'essai

Celui-ci avait pour but de vérifier l'existence des fonctions du système proposé, de mesurer ses performances, et d'acquérir une idée générale de son fonctionnement et de ses facilités d'utilisation. La documentation technique devait être examinée.

Les opérations du banc d'essai devaient utiliser, non pas un jeu d'essai fourni par chaque société pré-qualifiée, mais environ 100.000 notices de la Bibliographie de la France remises préalablement aux soumissionnaires sous forme de bandes magnétiques en format d'échange INTERMARC. En outre, des lots de notices bibliographiques et d'autorité avaient été préparées pour être enregistrées pendant le banc d'essai, afin de tester les possibilités du logiciel.

Chaque soumissionnaire devait mettre à notre disposition cinq opérateurs de saisie, 20 terminaux et un ordinateur de la même gamme que celui qui figurait dans sa proposition.

La Bibliothèque Nationale, de son côté, fournissait le personnel nécessaire à l'utilisation des 15 terminaux réservés à la consultation de la base.

Puisque, à certains moments, vingt terminaux devaient à la même seconde solliciter le système, il fallait affecter à chaque terminal deux personnes, dont l'une se chargeait de chronométrer le temps de réponse. Au minimum 35 bibliothécaires de la BN participèrent donc à chaque banc d'essai.

Celui-ci se déroulait sur deux jours consécutifs, le premier jour étant consacré à une présentation générale et à la démonstration du logiciel, afin de familiariser le personnel de la BN avec les fonctions d'accès aux terminaux. Le second jour était consacré aux tests préparés très soigneusement pour vérifier dans le détail les diverses fonctionnalités du système.

Nous laissons imaginer l'heureux effet psychologique de la participation des bibliothécaires à ces bancs d'essai. Compte tenu des roulements, c'est un total de 70 à 80 catalogueurs qui ont pu expérimenter les logiciels.

Cette participation s'est révélée particulièrement fructueuse. Grâce à elle, le groupe de dépouillement a pu recueillir des avis nombreux et intéressants sur les réactions des personnes concernées par la future informatisation, ces avis facilitant la notation de chaque système sur le plan de la facilité d'utilisation, de la puissance des outils disponibles dans la version en cours du logiciel, et de la qualité bibliographique.

5 - LES OPERATIONS A COURT TERME ET LES OPERATIONS PILOTES

Un excellent moyen d'entretenir au sein de l'établissement l'intérêt et la motivation suscités par le Schéma directeur était, d'une part de chercher à obtenir des résultats concrets à court terme, et d'autre part de lancer des opérations pilotes.

5-1 - Les opérations à court terme

Très tôt, le Groupe de projet fut frappé par la quantité d'énergie dépensée en pure perte, du point de vue de la base bibliographique, pour dactylographier les notices bibliographiques en vue d'alimenter les différents catalogues. Il fallait enregistrer ces notices et les mettre en réserve pour en enrichir la base lorsqu'elle serait opérationnelle. L'idée fut mise à exécution à partir de 1983 pour les suppléments de la Bibliographie de la France puis pour le catalogage des ouvrages étrangers.

L'édition automatique des fiches sur imprimante à laser, la création automatique des index et la sortie d'un nouveau produit, la Liste des acquisitions, ouvrages entrés par achat, don, échange, représentent une amélioration certaine du travail des services concernés, et ne contribuent pas peu à entretenir leur motivation.

5-2 - Les opérations pilotes

Trois services ont vu ainsi réaliser leur automatisation totale ou partielle : ce sont, dans le domaine bibliographique, le Centre national d'enregistrement des Publications en série (C.N.E.P.S.) et le Département de la Phonothèque et de l'audiovisuel ; dans le domaine commercial, le Service de vente des catalogues.

Le Centre national d'enregistrement des publications en série (CNEPS)

Celui-ci est le centre français participant à la constitution de la base de données internationale sur les publications en série : la base ISDS (International Serials Data System) créée par l'UNESCO dans le cadre du programme Unisist et gérée par le Centre international des publications en série (CIEPS). Le CNEPS traite chaque année 5000 publications françaises nouvelles et 1000 publications antérieures.

L'automatisation de ce service a permis de disposer d'une base très exhaustive des périodiques français : 45.000 titres à ce jour, dont la quasi totalité des titres vivants. Dans un proche avenir, elle sera rendue accessible aux différents services et utilisateurs de la Bibliothèque.

Elle a donné au CNEPS les moyens de participer efficacement à l'enrichissement de deux fichiers collectifs : le fichier ISDS, qui vient d'être mentionné, et le catalogue collectif national des périodiques (CCN) géré par la Direction des Bibliothèques, des Musées et de l'Information scientifique et technique (DBMIST).

Grâce à elle, le CNEPS répond plus rapidement aux demandes des éditeurs, centres de documentation, bibliothèques, qui utilisent l'ISSN pour leur gestion.

Cette base est actuellement implantée sur un DPS 8 Multics du Centre Interuniversitaire de calcul de Grenoble. Le logiciel spécifique, écrit en PL 1, utilise également les fonctions du logiciel de base TEXTO ; il permet la mise à jour et la consultation de la base en procédure interactive. Par la suite, cette base rejoindra la base bibliographique de la BN.

La base nationale des phonogrammes et des vidéogrammes

Le Département de la Phonothèque et de l'Audiovisuel reçoit chaque année par dépôt légal 12000 phonogrammes et vidéogrammes.

Pour répondre aux besoins d'un public très large et très diversifié - disquaires, discothécaires, discographes, maisons d'édition - il a été jugé intéressant de créer une base de données recensant la quasi totalité des informations relatives au contenu des phonogrammes et des vidéogrammes, et permettant donc des recherches très fines grâce aux nombreux points d'accès.

Une première maquette avait été présentée au MIDEM en janvier 1983, et l'a été par la suite lors de différents salons.

L'enregistrement des données est fait sous logiciel Texto, en format INTERMARC comme pour les documents imprimés. Les notices sont interrogeables par le nom des compositeurs et des interprètes, la marque, le(s) titre(s), l'éditeur, le producteur et le distributeur, et par combinaison de ces différentes clés.

La base, qui comporte actuellement près de 15000 références, est implantée provisoirement à Rennes sur l'ordinateur du Centre interuniversitaire de calcul de Bretagne et l'on peut y accéder de deux façons : au moyen d'un terminal classique d'ordinateur, et par Minitel grâce à une version Vidéotex.

L'objectif visé est d'implanter cette base sur un serveur pour en permettre l'accès à tout utilisateur externe. A court terme, de permettre chaque mois la sortie d'un catalogue des disques et vidéogrammes reçus.

Le Service de vente des catalogues

Pour alléger le fonctionnement du service, une solution à base de micro-ordinateur a été adoptée. Elle permet :

- la gestion de différents stocks de publications (7 lieux de stockage)
- la gestion des commandes et la facturation associée
- l'édition de journaux comptables
- la production de divers documents : tels que lettres-types, prospectus,..

Le système choisi étant multi-postes, il est possible de faire du traitement de texte sur un premier terminal pendant qu'un second exécute des transactions liées à la gestion des commandes.

L'ensemble a été installé au printemps 1984 et est en cours de recette.

6 - PREPARATION DE LA MISE EN PLACE DE LA BASE BIBLIOGRAPHIQUE

Puisqu'un peu plus d'un an devait s'écouler entre le choix du système en octobre 1983 et son implantation au début du printemps 1985, il importait d'utiliser au mieux le temps dont nous disposions pour préparer son arrivée.

Au préalable de nombreuses tâches doivent être accomplies, et l'organisation nécessaire doit être étudiée et mise en place.

6-1 - Le Comité de pilotage

Compte tenu des travaux d'adaptation du logiciel choisi, notamment sur le plan du catalogage, les délais sont très courts pour une réalisation aussi complexe et il est absolument indispensable d'assurer une coordination complète de tous les services concernés ainsi qu'un suivi très étroit des diverses opérations.

C'est pourquoi un Comité de pilotage a été mis en place pour suivre l'ensemble du projet sous tous ses aspects, dégager les priorités, prendre toutes les décisions nécessaires, valider à des points de contrôle bien définis les étapes de chaque activité, établir le calendrier, allouer les ressources, informer le personnel de la Bibliothèque Nationale.

Le Comité de pilotage se réunit régulièrement, une fois toutes les trois semaines environ, ses comptes rendus étant diffusés très largement à l'ensemble du personnel de la Bibliothèque.

Les principales tâches liées au projet de la base bibliographique sont les suivantes :

- le suivi de la réalisation du logiciel,
- la conversion des fichiers déjà automatisés et le chargement de la base,
- la formation du personnel,
- la préparation de l'environnement physique, la réception et l'installation du matériel informatique,
- la préparation de jeux d'essai et des tests préalables à la réception du logiciel,
- l'implantation progressive du système dans les services de Catalogage et les salles de lecture,
- la liaison avec le Catalogue collectif national de la DBMIST,
- la connexion du système informatique de la Bibliothèque Nationale à des utilisateurs extérieurs.

6-2 - L'étude d'organisation

Conforme en cela aux recommandations du Schéma Directeur, cette étude a eu pour objectif principal de décider et de préparer les mesures d'organisation qui doivent précéder, accompagner ou suivre la mise en place de la base bibliographique de la Bibliothèque Nationale.

Après une série d'interviews et de réunions techniques menées par un organisateur extérieur à la Bibliothèque Nationale, un premier rapport a été diffusé très largement auprès du personnel de la Bibliothèque. Cela a permis à tout le personnel concerné des circuits du Livre et du Périodique de faire, soit à titre individuel, soit à titre collectif au niveau des services, des commentaires sur ce rapport d'organisation qui se voulait être un document de travail.

L'ensemble des commentaires a été ensuite diffusé aux départements et services afin que chacun puisse prendre connaissance des appréciations ou observations des autres membres du personnel.

Dans une seconde étape, des thèmes de travail ont été retenus, et des groupes de travail constitués autour de ces thèmes.

Les thèmes choisis ont été les suivants :

- les circuits des documents imprimés et leurs conséquences sur les structures,
- la gestion des fichiers d'autorité,
- les postes de travail dans les circuits des documents,
- les conséquences de l'implantation de la base bibliographique pour les lecteurs ; la cotation des ouvrages ; les produits internes et externes.

Les conclusions tirées des travaux de ces différents groupes ont été consignées dans un rapport final, largement diffusé dans la Bibliothèque. Elles sont en cours d'examen par la direction de l'établissement.

CONCLUSION

Telle que nous venons de l'évoquer, la méthode de conduite du projet d'informatisation de la Bibliothèque Nationale a provoqué chez les bibliothécaires un changement complet d'attitude à l'égard de l'informatique.

S'ils se montraient très réservés au début en raison des expériences passées et plus confiants dans leurs instruments de travail traditionnels que dans les services que pouvait leur rendre cette technologie en pleine évolution, s'ils étaient inquiets du bouleversement qu'elle allait apporter, on a pu constater peu à peu une évolution des esprits.

La participation à divers groupes de travail, tout d'abord assez restreinte, puis considérablement amplifiée au cours de l'étude d'organisation, a, pour la première fois dans l'histoire de la Bibliothèque, donné l'occasion à un grand nombre de personnes de s'exprimer et de chercher ensemble des solutions réalistes aux problèmes d'organisation.

De même, c'est seulement grâce à la coopération très active de certains chefs de service et de leur personnel que les différents travaux liés à l'automatisation ont été et peuvent être menés à bien.

Le personnel permanent du Service informatique (3 personnes : le Chef de service, l'ingénieur chef de projet et la bibliothécaire analyste dont il a déjà été question) est en effet trop réduit pour pouvoir tout assurer tout seul même s'il le voulait. De plus, en raison des difficultés actuelles de recrutement d'informaticiens dans la Fonction publique, nous avons été amenés à rechercher des candidats au sein même de l'établissement. Déjà, deux bibliothécaires ont été formées au métier d'analyste pendant un stage de trois mois et demi, et deux autres recevront la même formation à la fin de l'été.

S'il se manifeste une certaine déception, c'est parmi les services dont l'automatisation n'a pas été considérée comme prioritaire. La tâche entreprise est de longue haleine. L'extension progressive de la base bibliographique aux fonds anciens et aux autres documents (cartes, musique, estampes, manuscrits...), l'automatisation de la gestion commerciale du Service photographique et les projets concernant les services administratifs donneront peu à peu satisfaction aux départements et services, dont les besoins sont nombreux.

NOTES

1 - La Bibliographie de la France annonce les monographies françaises entrées à la Bibliothèque Nationale par dépôt légal.

2 - RACINES : Recueil Actualisé des Choix INformatiquES.

3 - Suppléments I, Publications en série ; Supplément II, Publications officielles : Supplément III, Musique ; Supplément IV, Cartes et plans.